

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-16 (Canceled).

Claim 17 (Currently Amended) A method of manufacturing a composite sheet comprising:

providing a first bundle of parallel threads moving unidirectionally in a first direction;  
combining the moving bundle of parallel threads with a lap of thread(s),  
wherein the lap of thread(s) is oriented in a second direction that is substantially transverse to the first direction, to provide a combination of threads;  
heating the combination of threads, optionally applying pressure to the combination of threads, and cooling the combination of threads to provide a composite sheet;  
and  
collecting the composite sheet,  
wherein at least one of the bundle of parallel threads or the lap of threads comprises at least one thermoplastic organic material and at least one reinforcing material, and wherein the combination of threads comprises at least 10 percent of the thermoplastic organic material.

Claim 18 (Canceled).

Claim 19 (Currently Amended): The method of claim 17, wherein the reinforcing material is ~~provided as~~ comprises threads that are separate from one another and not connected.

Claim 20 (Previously Presented): The method of claim 17, wherein the combination of threads comprises at least 50 percent by weight of co-blended threads.

Claim 21 (Previously Presented): The method of claim 20, wherein the co-blended threads comprise glass filaments and filaments of a thermoplastic material which are intimately mixed.

Claim 22 (Previously Presented): The method of claim 17, wherein the lap of thread(s) is continuous and is combined with the first bundle of parallel threads with a rapier loom.

Claim 23 (Previously Presented): The method of claim 17, wherein the lap of thread(s) is continuous and is combined with the first bundle of parallel threads using a weft insertion carriage and wherein the threads of the first bundle of parallel threads and the threads of the lap of thread(s) are optionally sewn together by binding threads.

Claim 24 (Previously Presented): The method of claim 17, wherein the lap of thread(s) is continuous and the combination of threads is formed by incorporating the lap of thread(s) transversely into the first bundle of parallel threads with a netting loom with weft insertion by rotary arms.

Claim 25 (Previously Presented): The method of claim 17, wherein the lap of thread(s) are cut thread(s) and the combination of threads is formed by cutting the lap of thread(s) above the first parallel band of threads and allowing the cut lap of thread(s) to fall onto the first parallel band of threads.

Claim 26 (Previously Presented): The method of claim 25, wherein the cut lap of thread(s) contact a deflector before falling onto the first parallel band of threads.

Claim 27 (Previously Presented): The method of claim 17, wherein the lap of thread(s) is in the form of a mat and the combination of threads is formed by placing the mat on top of the first parallel band of threads.

Claim 28 (Previously Presented): The method of claim 27 further comprising providing a second parallel band of threads moving in the first direction and wherein the lap of thread(s) is between the first parallel band of threads and the second parallel bands of threads.

Claim 29 (Currently Amended) The method according to claim 17, further comprising introducing into the combination of threads or placing on the surface of the combination of threads one or more additional materials ~~to provide additional reinforcement, improve the mechanical properties, protect against electromagnetic radiation, improve molding capacity, improve surface properties, or reduce the weight of the composite sheet.~~

Claim 30 (Currently Amended): A method of manufacturing a composite ~~sheets~~ sheet comprising:

providing a first bundle of parallel threads moving unidirectionally in a first direction;

combining the moving bundle of parallel threads with a lap of thread(s),  
wherein the lap of thread(s) is oriented in a second direction that is ~~substantially~~ transverse to  
the first direction, to provide a combination of threads;

combining the combination of threads with a second bundle of parallel threads  
moving in the first direction to provide a second combination of threads;

heating the second combination of threads, optionally applying pressure to  
the second combination of threads, and cooling the second combination of threads to provide  
a composite sheet; and

collecting the composite sheet,

wherein at least one of the first bundle of parallel threads, the second bundle of  
parallel threads, or the lap of threads comprises at least one thermoplastic organic material,  
and at least ~~en~~ one reinforcing material, and at least one of the first bundle of parallel threads,  
the second bundle of parallel threads, or the lap of threads comprises at least two materials  
having different melting points, wherein the combination of threads comprises at least 10  
percent of the thermoplastic organic material.

Claim 31 (Previously Presented): The method according to claim 30, further  
comprising introducing into the combination of threads, introducing into the second  
combination of threads, placing on the surface of the combination of threads, or placing on  
the surface of the second combination of threads one or more additional materials to provide  
additional reinforcement, improve the mechanical properties, protect against electromagnetic  
radiation, improve molding capacity, improve surface properties, or reduce the weight of the  
composite sheet.

Claim 32 (Withdrawn): An apparatus for manufacturing a composite sheet comprising:

at least one first supplying device for supplying at least one bundle of parallel threads in a first direction into a combining device;

at least one second supplying device for supplying at least one lap of thread(s) into the combining device, wherein the combining device combines the at least one bundle of parallel threads and the at least one lap of thread(s) so that the thread(s) of the at least one lap of thread(s) are oriented in a second direction that is substantially transverse to the first direction to provide a combination of threads; and

at least one feeding device for feeding the combination of threads through at least one heating device to heat the combination of threads and at least one cooling device to cool the heated combination of threads to provide a composite sheet.

Claim 33 (Withdrawn): The apparatus of claim 32 further comprising one or more of a compression device for compressing the combination of threads, a cutting device for cutting the composite sheet, or a device for collecting the composite sheet.

Claim 34 (Withdrawn): The apparatus of claim 32, wherein the combining device is a rapier loom, a carriage loom, a netting loom with a weft insertion by rotary arms, or a deflector.

Claim 35 (Withdrawn): The apparatus of claim 32 further comprising an accumulator or move-away bar to draw the product away from the heating device if the apparatus stops feeding.

Claim 36 (Withdrawn): A composite sheet comprising a thermoplastic organic material and at least one reinforcing thread prepared by:

- providing a first bundle of parallel threads moving in a first direction;
- combining the moving bundle of parallel threads with a lap of thread(s), wherein the lap of thread(s) is oriented in a second direction that is substantially transverse to the first direction, to provide a combination of threads;
- heating the combination of threads, optionally applying pressure to the combination of threads, and cooling the combination of threads to provide a composite sheet; and
- collecting the composite sheet,

wherein at least one of the bundle of parallel threads or the lap of thread(s) comprises at least one organic material and at least one reinforcing material and shrinkage of the composite sheet is less than 6 percent.

Claim 37 (Currently Amended): A method of manufacturing a composite sheet comprising:

- providing a first bundle of parallel threads moving unidirectionally in a first direction;
- combining the moving bundle of parallel threads with a lap of thread(s),
- wherein the lap of thread(s) is oriented in a second direction that is substantially transverse to the first direction, to provide a woven combination of threads;
- heating the combination of threads, optionally applying pressure to the combination of threads, and cooling the combination of threads to provide a composite sheet;
- and
- collecting the composite sheet,

wherein at least one of the bundle of parallel threads or the lap of threads comprises at least ~~on~~ one organic material and at least ~~on~~ one reinforcing material.

Claim 38 (New): The method as claimed in claim 17, wherein the first bundle of parallel threads and the lap of threads are woven.

Claim 39 (New): The method of claim 17, comprising applying pressure to the combination of threads after heating.

Claim 40 (New): The method of Claim 17, wherein the composite sheet is obtained from solely the first bundle of parallel threads and the lap of threads.

Claim 41 (New): The method of Claim 17, wherein the lap of threads consists of continuous reinforcing threads.

Claim 42 (New): The method of Claim 17, wherein the lap of threads consists of continuous threads of organic material.

Claim 43 (New): The method as claimed in claim 30, wherein the first bundle of parallel threads and the lap of threads are woven.

Claim 44 (New): The method of claim 30, comprising applying pressure to the combination of threads after heating.

Claim 45 (New): The method of Claim 30, wherein the composite sheet comprises solely the first bundle of parallel threads, the lap of threads, and the second bundle of parallel threads.

Claim 46 (New): The method of Claim 30, wherein the lap of threads consists of continuous reinforcing threads.

Claim 47 (New): The method of Claim 30, wherein the lap of threads consists of continuous threads of organic material.

Claim 48 (New): The method of claim 37, comprising applying pressure to the combination of threads after heating.

Claim 49 (New): The method of Claim 37, wherein the composite sheet is obtained from solely the first bundle of parallel threads and the lap of threads.

Claim 50 (New): The method of Claim 37, wherein the lap of threads consists of continuous reinforcing threads.

Claim 51 (New): The method of Claim 37, wherein the lap of threads consists of continuous threads of organic material.



BASIS FOR THE AMENDMENT

Claims 17 and 19-51 are active in the present application. Claims 1-16 and 18 have been canceled. Claims 32-36 are non-elected claims presently withdrawn from prosecution. Independent Claims 17, 30 and 37 have been amended to require that the first bundle of threads is moving unidirectionally. Support for the amendment is found on page 3, line 15. Independent Claims 17, 30 and 37 have been amended to require that the second direction is transverse to the first direction (e.g., the term "substantially" has been deleted from the claims). Independent Claims 30 and 38 have been further amended to correct typographical errors. Claims 38-51 are new claims. Support for new Claims 38 and 43 is found in the paragraph bridging pages 14 and 15. Support for new dependent Claims 39, 44 and 48 is found in original independent Claims 17, 30 and 38. Support for new dependent Claims 40, 45 and 49 is found on page 3, line 17. Support for new dependent Claims 41-42, 36-47, and 50-51 is found in the paragraph bridging pages 5 and 6. No new matter is believed to have been added by this amendment.

### REQUEST FOR RECONSIDERATION

Applicants thank Examiner Aftergut for the helpful and courteous discussion of June 24, 2004. During the discussion, Applicants' U.S. representative presented arguments that the prior art process for producing a composite material disclosed in at least one of the prior art references (Whisler) does not disclose a process wherein reinforcing threads are continuously and unidirectionally oriented.

Independent Claims 17, 30 and 37 have been amended to require that the first bundle of threads is oriented unidirectionally in a first direction. This embodiment of the invention is described in the specification as originally filed and is supported by the drawings. For example in Figure 1 it is shown that threads from a number of spools are placed in a parallel direction along a series of rollers. A second thread also runs transversely to the unidirectional first bundle of parallel threads.

The Office rejected present independent Claim 17 in view of a patent to Whisler (US 5,965,262). Applicants traverse the rejection on the grounds that Whisler does not disclose a process wherein a first bundle of continuous threads is unidirectionally oriented and a second thread (e.g., a lap of threads) is placed transverse to the first bundle of unidirectional parallel threads. This difference in the presently claimed invention and the process described in Whisler is evident upon comparing the figures and disclosure provided in Whisler with, for example, Figure 1 of the present specification. Figure 1 of the present specification and Figure 4 of Whisler may be found in Appendices I and II at the end of this document.

One can see that in the process of Whisler the threads are placed at an angle to one another. Obviously when the composite sheet of Whisler moves forward through the process (i.e., the direction of the prior art process is shown as reference numeral 300 in Figure 4) the fibers are laid in varying orientation to the process direction (the fibers are shown as

reference numeral 20 in Figure 4). Therefore the process of Whisler does not lay a first bundle of fibers in a unidirectional fashion.

Moreover, Whisler discloses throughout the patent that the reinforcing fibers and polymeric material of the prior art process are “angularly positioned” relative to one another (see, for example, column 1, lines 41-43; column 1, line 63 – column 2, line 4; column 2, line 15; column 2, line 60; column 8, lines 29-41; column 8 lines 48-51). Applicants therefore submit that the methods of the present independent Claims 17 and 30 are patentable over Whisler.

Applicants submit that the subject matter of new dependent Claims 38 and 43 is further patentable over Whisler on the grounds that Whisler discloses that “the first and second strand portions are not woven or knitted together” (column 2, lines 5-6).

Applicants submit that the subject matter of new dependent Claims 40, 46 and 50 is further patentable over Whisler on the grounds that none of the prior art references cited by the Office against the present claims describe a composite sheet that must be made only (e.g., solely) from the threads. New dependent Claims 40, 45 and 49 exclude composite sheets that may have an interlaying thermoplastic sheet or other type of material that is not a part of the parallel or lap threads.

Applicants submit that the subject matter of new dependent Claims 41-42, 46-47 and 50-51 is further patentable over the disclosure of Whisler on the grounds that each of the strands disclosed in Whisler comprise both a reinforcing fiber and a polymeric material (column 1, line 41; column 2, lines 13-141; and column 2, lines 57-58).

The present application claims priority to French Application No. 99/10,842 filed on August 27, 1999. Applicants request the Examiner acknowledge priority under 35 U.S.C. §119 in the next communication from the Office.

Application No. 10/068,857  
Reply to Office Action of April 16, 2004.

Applicants respectfully request the withdrawal of the rejections and the passage of all  
now-pending claims to Issue.

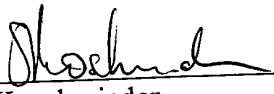
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